

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A liquid ejection apparatus, comprising:
 - a liquid ejection head, comprising:
 - a nozzle orifice communicated with a pressure chamber; and
 - a pressure generating element, which generates pressure fluctuation in liquid which is contained in the pressure chamber;
 - a drive signal generator, which generates a drive signal containing, within one cycle thereof:
 - a first drive subsignal, containing a plurality of first drive pulses each of which drives the pressure generating element to generate the pressure fluctuation so as to eject the liquid from the nozzle orifice, and a second drive pulse which drives the pressure generating element to generate the pressure fluctuation so as not to eject the liquid from the nozzle orifice; and
 - at least one second drive subsignal, containing the first drive pulses without containing the second drive pulse; and
 - a pulse supplier, which selectively supplies at least one of the first drive pulses and the second drive pulse to the pressure generating element, in accordance with an amount of the liquid to be ejected from the nozzle orifice,

wherein the first drive subsignal is associated with a first minimum area subjected to the liquid ejection; ~~and~~

wherein the second drive subsignal is associated with a second minimum area subjected to the liquid ejection, which is different from the first minimum area; and

wherein a duration of the second drive subsignal is shorter than a duration of the first drive subsignal.

2. (original): The liquid ejection apparatus as set forth in claim 1, wherein all of the first drive pulses have an identical waveform.

3. (original): The liquid ejection apparatus as set forth in claim 1, wherein the second drive subsignal is arranged at the beginning of the one cycle of the drive signal.

4. (original): The liquid ejection apparatus as set forth in claim 1, wherein:
each of the first drive pulses and the second pulse is designated by one of pulse selection data processed in the pulse supplier; and
the number of the pulse selection data for the first drive subsignal and the number of the pulse selection data for the second drive subsignal are the same, so that a predetermined potential of the second drive subsignal is supplied to the pressure generating element by one of the pulse selection data for the second drive subsignal.

5. (original): The liquid ejection apparatus as set forth in claim 1, wherein:
the drive signal is repetitively generated in accordance with a series of first timing signals which are generated in the external of the drive signal generator; and
a duration of the one cycle of the drive signal is less than an interval of the first timing signals.

6. (original): The liquid ejection apparatus as set forth in claim 5, wherein:
the minimum area is repetitively defined in accordance with a series of second timing signals which are generated in the external of the drive signal generator; and
a duration of each of the first drive subsignal and the second drive subsignal is less than an interval of the second timing signals.

7. (original): The liquid ejection apparatus as set forth in claim 1, wherein the first drive pulses includes a pair of first ejection pulses each for ejecting a liquid droplet having a first volume, and a second ejection pulse generated between the first ejection pulses for ejecting a liquid droplet having a second volume less than the first volume.

8. (original): The liquid ejection apparatus as set forth in claim 1, wherein the first drive pulses are generated at a fixed interval each for ejecting a liquid droplet having a fixed volume.

9. (previously presented): A method of controlling a liquid ejection apparatus which comprises a liquid ejection head provided with: a nozzle orifice communicated with a pressure chamber; and a pressure generating element, which generates pressure fluctuation in liquid which is contained in the pressure chamber, the method comprising steps of:

generating a drive signal containing, within one cycle thereof:

a first drive subsignal, containing a plurality of first drive pulses each of which drives the pressure generating element to generate the pressure fluctuation so as to eject the liquid from the nozzle orifice, and a second drive pulse which drives the pressure generating element to generate the pressure fluctuation so as not to eject the liquid from the nozzle orifice; and

at least one second drive subsignal, containing the first drive pulses without containing the second drive pulse; and

supplying selectively at least one of the first drive pulses and the second drive pulse to the pressure generating element, in accordance with an amount of the liquid to be ejected from the nozzle orifice,

wherein the first drive subsignal is associated with a first minimum area subjected to the liquid ejection; and

wherein the second drive subsignal is associated with a second minimum area subjected to the liquid ejection, which is different from the first minimum area; and

wherein a duration of the second drive subsignal is shorter than a duration of the first drive subsignal.

10. (previously presented): The liquid ejection apparatus as set forth in claim 1, wherein the drive signal generator repetitively generates the drive signal such that the first drive subsignal and the second drive subsignal are alternately generated.

11. (previously presented): The method as set forth in claim 9, wherein the drive signal generator repetitively generates the drive signal such that the first drive subsignal and the second drive subsignal are alternately generated.

12. (new): The liquid ejecting apparatus as set forth in claim 1, wherein the second drive pulse is prior to or subsequent to the plurality of first drive pulses in the first drive subsignal, and the plurality of first drive pulses contained in the first drive subsignal are identical with the plurality of first drive pulses contained in the second drive subsignal.

13. (new): The method as set forth in claim 9, wherein the second drive pulse is prior to or subsequent to the plurality of first drive pulses in the first drive subsignal, and the plurality of first drive pulses contained in the first drive subsignal are identical with the plurality of first drive pulses contained in the second drive subsignal.